Arkansas

4-H Veterinary Science







Urinalysis



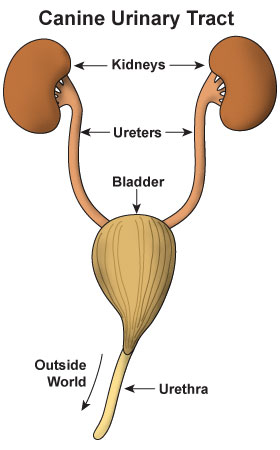
Why Urine?

* Urine is the end product of a filtering process that removes waste from the body
* The color of urine can give you information about hydration level as well as possible underlying disease
* A urinalysis should be performed at least yearly for healthy pets, and more often for older animals and those with existing or chronic health issues
* Important elements of a urinalysis include a visual inspection of the urine sample, a dipstick test, and microscopic evaluation of urine sediment

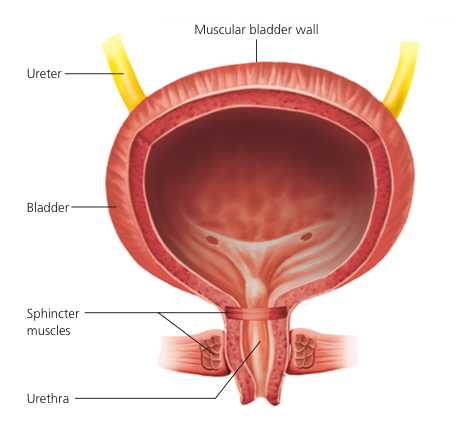


The Urinary System

* The Urinary tract consists of the kidneys, the ureters, the bladder, the urethra, and finally, the urethral opening at either the end of the penis or just within the vagina
* Kidneys filter out waste products from the blood
* Ureters Connect the kidneys to the bladder
* The Urethra is a tube that is controlled by a sphincter muscle that empties the bladder to the outside world



The Bladder



Trigone

Ureteral

Opening

Detrusor muscle

Ureter

Bladder

Sphincter

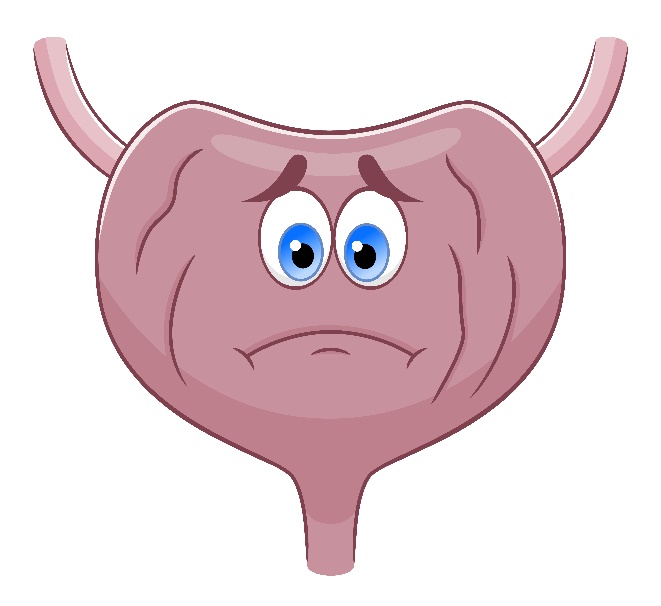
Muscles

Urethra

Bladder Neck

Urinary Tract Problems

* Inflammation of bladder caused by stress
* Bacterial or fungal bladder infections
* Inflammation of bladder from urinary crystals
* Inflammation of bladder from bladder stones
* Inflammation of the urethra
* Damage to ureters by trauma, passing kidney stones, surgical accident or cancer
* Damage to kidneys by dehydration, infection, toxins or cancer



Feline Idiopathic Cystitis

* Inflammation of the bladder with an unknown cause
* Can quickly lead to kidney and heart problems
* Can lead to total blockage of urethra in males
* Frequent attempts to urinate
* Straining to urinate
* Urinating in inappropriate places in the house
* Crying out during attempts to urinate
* Blood-tinged urine



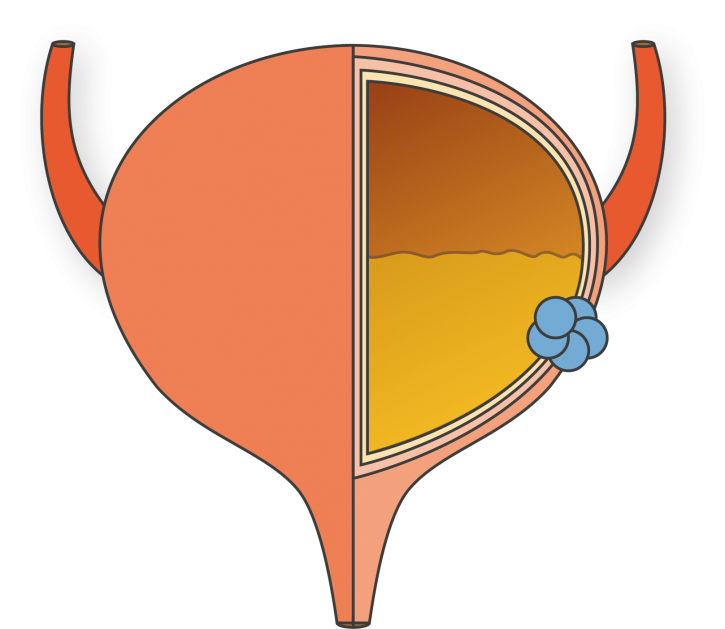
Bladder Infection

* Bacterial or fungal contamination via urethra
* Can lead to kidney infection
* Frequent attempts to urinate
* Straining to urinate
* Urinating in inappropriate places in the house
* Crying out during attempts to urinate
* Blood-tinged urine
* Cloudy and odorous urine



Bladder Cancer

* Causes an obstruction within the urinary tract
* More common in dogs
* Transitional cell carcinoma is most common type
* Cancer is very aggressive
* Symptoms are similar to bladder infection
* Should always be considered if blood is in urine



Visual Characteristics of Urine

**Color**

Clear to yellow is normal

Dark yellow to brownish yellow indicates dehydration

Brown to dark brown indicates muscle damage

Pink, Orange or Dark Red indicates blood

**Clarity**

Clear is normal

Cloudy may indicate infection or inflammation

Precipitates may indicate neoplasia (cancer)

**Urine stream**

Urination should occur in a steady stream

A slow stream indicates a problem

Leakage (incontinence) indicates a problem

Posturing to urinate without urine is called anuria

The Dipstick Test

**Urine pH** is affected by many variables, including time since the last meal, diet, a number of medications, lung and kidney function, and a renal and systemic diseases.

**Blood** in urine can occur with disease anywhere in the urogenital tract.

**Leukocytes** (white blood cells) in urine indicates active inflammation in the urogenital tract.

**Glucose** in urine means that either the glucose in blood is elevated or there is a kidney disease that prevents full reabsorption of glucose.

**Bilirubin** in urine occurs with hemolysis (break down of red blood cells) or liver disease.

**Protein** in urine is due to pre-glomerular, glomerular, or postglomerular disease. The glomerulus is a cluster of capillaries around the end of a kidney tubule, where waste products are filtered from the blood.

**Ketones** in urine are formed when the body is unable to get sufficient energy from glucose and must metabolize large quantities of fatty acids instead.

**Specific gravity** is an indirect measure of kidney function.

Urine Sediment

